

Artillery and Fire Support for The Interim Force: Do proposed changes meet the requirements?

A Monograph

by

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Abstract

ARTILLERY AND FIRE SUPPORT FOR THE INTERIM FORCE: DO PROPOSED CHANGES MEET THE REQUIREMENTS? by Major Kevin B. Marcus, United States Army, 58 pages.

The purpose of this monograph is to examine the sufficiency of proposed field artillery and fire support doctrine and organizations for the Interim Brigade Combat Team (IBCT). The primary research question is: Do proposed changes to fire support doctrine and organizations meet the requirements of the interim force? The question is answered by first identifying the context and threats that provide a basis for IBCT organization and employment doctrine. This context provides a basis for a subsequent description of the IBCT's requirements for indirect fires as stated in its Operational and Organizational Concept. These requirements are then juxtaposed against the proposed changes as outlined in the Advanced Fires Concept. The author's analysis concludes that the proposed changes do not meet those requirements as stated in the IBCT's Operational and Organizational Concept.

Because of its evolving threats and unique operating environment, the IBCT will require accurate, responsive fire support. The cannon and rocket artillery provided by Army field artillery units will be an integral supplier of those fires. As the Army transforms its maneuver forces in order to provide a more responsive, agile force its supporting artillery and fire support organizations will change as well. The issue is not the probability or necessity of change; changes are going to be made and they are, as this monograph establishes, necessary. The issue is the form of these changes. Will changes to both artillery organizations and fire support doctrine meet the requirements of the interim force?

These proposed changes are first, and most profoundly seen, in artillery organization to support the IBCT. The IBCT will have organic levels of artillery and fire support personnel not seen in existing organizations. Changes are also seen in doctrine: a shift towards effects-based fires and an emphasis on precision fires are both designed to provide new doctrinal paradigms in support of an equally changing maneuver paradigm.

Proposed organizational and doctrinal changes do not meet the stated requirements. While the IBCT has an organic artillery battalion, its equipment shortfalls severely limit its effectiveness. Moreover, while this organic artillery battalion, coupled with increased mortar strengths, increases responsiveness, a reliance on fragile C4ISR links for reach-back fires needed to supplement organic fires may translate into a lack of reinforcing fires for either asset. Finally, while a shift to effects-based fires posits greater nesting of fire support with the combined arms commander's intent, such a shift lacks a common understanding necessary to allow the concept's full realization.

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Chapter 1

Introduction

As the nature of conflict evolves, so must the U.S. Army. The form of this evolution is the Army's transformation effort. This effort, focused on the development of a more agile, responsive force, is occurring along three axes. The endstate is a fully transformed Army (the objective force) to be developed and fielded no earlier than 2010. Portions of the Army (e.g. the majority of our existing armor/mechanized infantry divisions) become the "legacy force" and are modernized with digital technologies as they become available. The "interim force" bridges the gap between the two and provides an initial capability for a lethal yet lighter and more deployable force. This interim force is being developed at Ft. Lewis, Washington in a two phased operation. Initial activities focus with the fielding of initial brigade combat teams (IBCTs) with "in lieu of" equipment (i.e. Light Armored Vehicles [LAV III] which represent capabilities for a future Medium Armored Vehicle [MAV]) to provide "threshold capabilities".¹ This initial BCT will become an interim BCT and serve as a model for the development of subsequent BCTs. Those follow on units will be fielded with "almost all TOE [table of organization and equipment] MAVs and equipment and some in-lieu-of items" and be ready for fielding no earlier than 2003.²

The interim force is not an experimental force. While lessons learned during its development drive future aspects of the objective force, the interim force is designed to be employed in the full spectrum of military operations. Indeed, the interim force allows the Army to realize the immediate value of transformation. As the rest of the Army transforms, the interim force provides a force of choice for immediate deployment against a variety of threats.

While not a revolutionary force (drawing on lessons from previous Army organizations), it does represent some significant paradigm shifts. Perhaps most significant is the IBCT's modus

¹ Scott Gourley, "Milestones in Army Transformation", *Army* March 2000, [journal on-line]; available from <http://www.usa.org>; Internet; accessed 26 August 2000

² Ibid.

operandi for combat operations. MG James Dubik, the U.S. Army's Training and Doctrine Command (TRADOC) Deputy Commanding General for Transformation explains the interim force will "move from a general rule of making contact with the enemy, developing the situation and then maneuvering the force, to one of understanding the situation, maneuvering the force and then making contact at the time and place of our choosing".³

It also represents a series of balancing acts. Probably the most significant is to preserve lethality while increasing strategic and operational mobility by decreasing transportation requirements. Consequently, the interim force is a lighter force (with less organic protection [e.g. armored vehicles]) and a smaller force (operating as a brigade without many of the assets normally found in a brigade's divisional "slice"). These reductions are juxtaposed with an expansion of its area of operations. Battlefields continue to expand in size; the IBCT's area of operations will expand as well. Because of its operating in a larger area of operations, its reliance upon indirect fires could take on added significance. The IBCT will disperse in smaller units throughout an expanded battlefield and will not rely on the density of massed formations for decision. They will turn to indirect fires, perhaps more than existing units, to support decisive maneuver. Thus, the success of the interim force in combat in large measure relies on accurate, responsive and effective indirect fires. Cannon and rocket artillery provided by Army field artillery units as part of an overarching joint fire package will be an integral supplier of those fires.

While both maneuver and fire support communities agree on the importance of these fires, on-going discussions in various military journals and publications coupled with recent operational and organizational concepts have revealed general dissatisfaction with both current and proposed contributions of cannon and rocket artillery support. Some perceive that "the Field Artillery School has turned inward, focusing on FA (sic.) branch issues at the exclusion of support for the

³ Dennis Steele, "Soldiering Outside the Box", Army September 2000 [journal on-line]; available from <http://www.usa.org>; Internet; accessed on 26 August 2000.

maneuver commander in combined arms operations".⁴ Others opine that field artillery is simply "walking away from the close fight" and no longer is prepared to support maneuver commanders at the "sharp end".⁵ Even within the Field Artillery, there is a growing realization that it must change in order to support the transforming Army. As recently as early 2000, the Commanding General of the Field Artillery Center and School observed that fire support doctrine had to change in order to address changes in the operational (and tactical) environments.⁶

The issue is not the probability of change. Artillery and fire support doctrine will change. The issue is the form of the changes. Most importantly, will changes to existing artillery and fire support doctrines and organizations meet the requirements of the combined arms commanders of the interim force? As well, will these requirements be met in close combat?

The interim force will have to engage in close combat. Close combat, as defined by the DRAG edition of FM 3-0 Operations is "...carried out with direct fire weapons supported by indirect fire, air delivered fires and non-lethal engagement means [and] defeats or destroys forces or seizes and retains ground".⁷ Cannon and rocket fires will be integral to their success in this sharp, bloody environment. Again, the question that must be asked is: Do proposed changes to fire support doctrine and organizations meet the requirements of the interim force in close combat?

This monograph answers that question. The context of the interim force is established first by examining the evolving threats and changing physical environments of future battlefields and subsequently describing IBCT organization, capabilities and limitations. Organizational aspects then serve as a context for a description of employment patterns and tactics (focusing on close

4 Toney Stricklin, MG, "Transforming the FA and Force", Field Artillery (March-April 2000), 2

5 Carl F. Ernst, MG, "Is FA Walking Away From the Close Fight?", Field Artillery (September-October 1999), 42: Both MG Stricklin and Ernst are acknowledging the symptoms of a problem; while MG Stricklin acknowledges that the Artillery may be turning inwards; MG Ernst puts a fine point on what may be only one result of that inward turn.

6 Toney Stricklin MG, "World Fires for the 21st Century", Field Artillery (January/February 2000), 1

7 U.S. Department of the Army, FM 3-0 (DRAG Ed.) Operations (Washington, D.C: Government Printing Office, 2000), 4-4

combat) which in turn justify the interim force's requirements for indirect fires. In turn, the requirements themselves (as stated in the IBCT's "Operational and Organizational Concept") are described as basis for later analysis.

Some may argue that there is no need to change existing fire support organizations or doctrine; both in current form can meet proposed requirements. This monograph, however, refutes that by clearly describing how existing doctrinal/organizational constructs fall short of fulfilling the requirements. Existing organizational and doctrinal shortfalls establish the need for changes in both artillery and fire support doctrine and organizations.

The proposed changes to both artillery and fire support doctrine and organizations (as described by the Fire Support Operational and Organizational Concept (version 2.0) Future Fires and Effects for Advanced Full Dimension Operations and the initial draft of Brigade Special Text (BST) 6-20-40 Tactics, Techniques and Procedures for Fire Support for the Brigade Combat Team) are then evaluated against the stated requirements in order to determine if they do, or do not, meet them.

This paper concludes that while the changes to artillery organizations and fire support doctrine are well intentioned, they do not entirely meet the requirements as stated in the IBCT's Operational and Organizational Requirement.

Chapter 2

Future Battlefields and Threats: A Context for the Interim Force

The IBCT is a product of its environment. The IBCT's most likely physical environment will be remote, hostile, increasingly populated by non-combatants (i.e. non-governmental organizations [NGOs], private voluntary organizations [PVOs] and media) and technologically sophisticated. Its threats range from the perhaps most dangerous (but perhaps least likely) massed armored formations to trans-national terrorist groups. This environment shapes the organization and employment of the IBCT.

While much has changed, many of the same challenges remain. First among the constants is the potential for combat. We still live in a dangerous world; the potential for combat will remain. Even with evolutionary developments in information technology, combat will continue to feature (in some degree) the fog and friction so characteristic of wars throughout history. Combat will continue and while its form may change, its fundamental character will remain constant. As social observer and author Robert Kaplan notes, “the question is not whether there will be war (there will be a lot of it) but what kind of war. And who will fight whom?”⁸

This chapter outlines that environment in order to provide a context for a later description of IBCT organization and employment patterns. The environment is described in terms of both the characteristics of future battlefields and the common trends in threat tactics.

Characteristics of Future Battlefields

The nature of the future battlefield is evolving. This evolution will produce a number of characteristics that influence military operations. Among them are the lack of developed infrastructure, the predominance of urban or complex terrain, the expansion of the battlefield, the increased presence of civilians (to include NGO and PVO representatives and media) and increased technological sophistication.

⁸ Robert D. Kaplan, The Coming Anarchy (New York: Random House, 2000), 45

Future battlefields will lack developed infrastructure. Most likely areas of future conflict are found in developing countries that have a comparative lack of transportation, communications and developed commercial facilities.⁹ This lack of facilities will compound the difficulties involved in building and maintaining combat power.

While they lack infrastructure, they will not lack urbanization. Indeed, future battlefields are much more likely to be in urban/complex terrain. Two factors contribute to this increased likelihood. First is the rise in urban population and expansion of urban areas. One of the Army's most notable futurists reports that approximately 60 to 70 percent of the world's population will live in urban areas by 2025.¹⁰ Next is the rising importance of these urban areas. Large metropolitan areas house the majority of a government's infrastructure and support and could form significant centers of gravity for the defender or attacker.

A third trait will be the continued evolution of the "empty battlefield". Units on future battlefields will become even more dispersed as both enemy and friendly forces attempt to protect themselves from improved acquisition and precision guided munition (PGM) technologies. Moreover, as weapons ranges expand and units disperse, the static battlefield with fixed lines, echeloned formations and largely secure rear areas will be replaced by a more fluid battlefield. Thus, the physical dimensions of future battlefields will increase placing greater strains on control and synchronization.¹¹

While the battlefield may empty of combatants, the battlefield will fill with a number of non-combatants. The aforementioned increased likelihood of fighting in urban areas coupled with rising urban populations will place military forces in closer proximity to large numbers of civilians. This proximity will emphasize military requirements to avoid or minimize collateral damage, address the effects of collateral damage and deal with large numbers of displaced

⁹ Ibid., passim

¹⁰ Robert H. Scales, ed., Future Warfare (Carlisle Barracks, PA: US Army War College, 1999), 178

¹¹ U.S. Department of the Army, Knowledge and Speed: The Annual Report on the Army After Next Project to the Chief of Staff of the Army (Washington, D.C.: Army Chief of Staff, 1997), 4

civilians. Thus, non-governmental and private voluntary organizations (NGOs and PVOs) will be more prominent and will populate the battlefield to address these concerns. Their involvement will constrain targeting and force the IBCT to consider and address interagency cooperation and coordination even in close combat.

Other non-combatants will be media representatives whose presence will constrain military operations. Beyond targeting constraints, media on the battlefield constrains by fostering a concern not just with actions, but with the appearance of those actions. As Robert Kaplan observed in the wake of the Kosovo air campaign: “The presence of cameras in the field of operations does more than exert a constraint on military actions. It changes the focus of hostilities from the enemy’s fielded forces to the civilian opinion at home which sustains the will to fight.”¹² Commanders’ actions will have an increased audience. The IBCT’s commanders will have to consider the appearance of their actions and the impact of that appearance on the opinions of a wider audience. Thus, the application of lethal effects will be constrained not just by range or weapons constraints, but by the appearance of those effects as they are treated by the media.

Future battlefields will feature increased technology. This increased technology offers possibilities to increase the efficiency and effectiveness of close combat. Advances in weaponry, sensors and communications will translate to an ever-increasing degree of sophistication. Enhanced information technologies provide a capability to speed the more effective flow of information, which, when transformed into intelligence can allow the Army to concentrate forces quickly and engage effectively. These technological advances will not just be enjoyed by the developed western nations. Technologies such as computers and cellular telephones are within the reach of almost anyone with minimal investment. Thus, both sides will have access to technological advances and both will exploit their possibilities in order to make combat more efficient and effective.

¹² Kaplan, 192: Emerging doctrine has gone to great lengths to emphasize the role of media on the battlefield and recognize its constraints and possibilities.

These characteristics have a marked impact on future close combat; future enemies are evolving to realize these new characteristics and capitalize on them by using them to their advantage.

Common Trends in Threat Tactics

This changing environment shapes the tactics of the threat forces that operate within it. These threats are full spectrum threats ranging from local terrorist groups to fully mechanized/armored forces with weapons of mass destruction. Notwithstanding this range, certain common trends appear throughout the full spectrum of threats. Two, in particular, are significant. First, future threats will be adaptive and more apt to conduct asymmetrical attacks. Next, future threats will be well equipped for close combat.

Future threats will be adaptive and more likely to adopt asymmetrical methods to attack U.S. forces. They will have learned from the US Army's successes while noting its failures. Non-western militaries are increasingly identifying and internalizing the lessons of recent wars. This process provides two main areas of concern. First, it results in the identification of significant U.S. force vulnerabilities. Among the most significant are "an aversion to casualties and excessive collateral damage, a sensitivity to domestic and world opinion, and an apparent lack of commitment to prepare for and fight long wars."¹³ The second, and perhaps more significant concern is that our future enemies will translate this understanding into action; they will directly attack our weaknesses with forms and means of asymmetrical response.

Such a response will avoid the U.S. Army's strengths by arraying comparative advantages against perceived vulnerabilities. The IBCT will face threats that adopt a number of assymetrical responses. As an example, one asymmetrical response will be to disperse. As previously noted, future adaptive threats (realizing our advantages in acquisition and precision strike capabilities)

¹³ Scales, 48

will disperse and present fewer, concentrated targets. In order to close with these forces simultaneously, U.S. forces will then be forced to disperse as well.¹⁴

The use of cities offers another form of asymmetric response. Future threats are much more likely to operate from urban areas. Using these urban areas offers several advantages to a threat force. First among them is the protection offered by masonry and buildings which can offset the U.S. forces' advantages in acquisition and engagement. Other advantages can be found in the limited engagement ranges in urban terrain which negate the advantages of our long-range weaponry and the necessity to constrain any use of fires to reduce collateral damage. Moreover, the urban environment is multi-dimensional and offers significant avenues of approach; threat forces can use sewers, basements and rooftops to attack US forces in ways impossible in more open battlefields. Clearly, U.S. forces will fight in cities in future conflicts.

Time offers another significant means of assymetrical attack. Future threats will use time to their advantage. They will act quickly to counter the deployment of U.S. forces and gain the early initiative. Few enemies will forget the lessons of Desert Storm. In Virtual War Micheal Ignatieff asserts that “The Gulf War exposed the potential vulnerability of the American logistical back up and the Army’s elephantine slowness in deploying troops to combat. Future opponents would not give anyone this kind of time, or leave the logistical build up unopposed.”¹⁵ Time will indeed provide an effective means of asymmetry.

Another means of asymmetrical attack will be deception. While the enemy may concede our ability to acquire using advanced sensors, he will understand that humans still have to analyze and act on the information provided. Future threats will portray the conventional while executing unconventionally. One example was provided from a TRADOC Analysis Center (TRAC) simulation in which a transnational terrorist group chartered a civilian Boeing 757, transformed it

¹⁴ John M. House, “The Enemy After Next”, Military Review 78 (2), 23

¹⁵ Micheal Ignatieff, Virtual War (New York: Metropolitan Books, 2000), 174

into a flying bomb and used it to attack US military forces.¹⁶ Other forms of deception will be more traditional. Threat forces will use tactics such as using a strong force to portray a main attack with ground forces only to launch the real main attack with air forces against another, more lightly defended objective.¹⁷ Deception, in whatever form, will be an essential tactic for future threats. An appreciation for the threats' capability to deceive must drive a conscious effort to look beyond the surface of the data and information resultant from increasingly automated acquisition systems.

Future threats will be well equipped. While not a technological or materiel match for the IBCT, future threats will possess significant capabilities. Many threats will be armed with conventional weaponry from tanks and/or armored personnel carriers to large numbers of anti-tank guided missiles. The demise of economies in the former Soviet Union saw the international arms market flooded with relatively cheap arms, ammunition and explosives. Many threats will augment these holdings with significant numbers of "high payoff" technologies such as digital communications (i.e. cellular phones), night vision capabilities, long range artillery and precision guided munitions, counter-air/missile technologies and most significantly, weapons of mass destruction.¹⁸ Some threats may be exceedingly well armed with sophisticated technologies. For example, intra and international terrorist organizations funded with the proceeds of a lucrative narcotics trade will be extremely well equipped. An example is the current rebel force (FARC) in Columbia that uses laptop computers with cellular modems to maintain contact over long distances.¹⁹ Thus; the Army cannot afford to believe that future threats will be poorly equipped. On the contrary, given the widespread availability of relatively advanced weaponry and technology, future threats will be increasingly lethal.

¹⁶ House, 26

¹⁷ Ibid., 23

¹⁸ Maxey MacFarland, COL, "The Operational Environment" briefing presented to the Advanced Military Studies Program at Ft. Leavenworth, KS on 5 August 2000.

¹⁹ Luis Medina, LTC (Columbia), interview with the author, El Gorah, Egypt, May 2000: LTC Medina had the opportunity to capture one such laptop during combat operations against FARC forces.

Conclusion

In conclusion, future battlefields will be remote, lacking critical infrastructure, and likely be found in urban areas. They will also feature increased numbers of civilians (local populations, NGO/PVO representatives and media) and sophisticated technology. Future threats are numerous and range from massed armored units to the more expected developing nation military or paramilitary forces. Nonetheless, there are trends common to these full spectrum threats. These common trends include the likelihood that future threats will be adaptive, asymmetric and well equipped for close combat. This environment will shape the IBCT as a force that must be able to operate in undeveloped theaters and in complex/urban terrain. As well, the IBCT's commanders must be able to operate in an environment constrained by increasing numbers of civilians and an increased media presence. Significantly, the IBCT must be able to conduct close combat in this environment against threat forces that are increasingly well equipped.

Chapter 3

IBCT Organization and Employment

The IBCT's organizational design is not revolutionary and owes much to previous designs such as the heavy separate brigades and regimental cavalry squadrons.²⁰ While clearly evolutionary, its design does proffer one organization specifically organized to provide the Army with a force to operate successfully in the face of adaptive, often asymmetrical full spectrum, and well-equipped threats.

This chapter describes the IBCT's organization and employment. Organization is discussed in terms of major maneuver and support units (and the inherent capabilities and limitations of the Brigade as a whole) while employment is described in terms of patterns, approaches and tactics. Analysis reveals that the IBCT's organizational structure, coupled with supporting tactical employment doctrine does, with limitations, successfully balance the competing requirements of lethality, mobility and survivability allowing it to thrive in the post-cold war environment

IBCT Organization

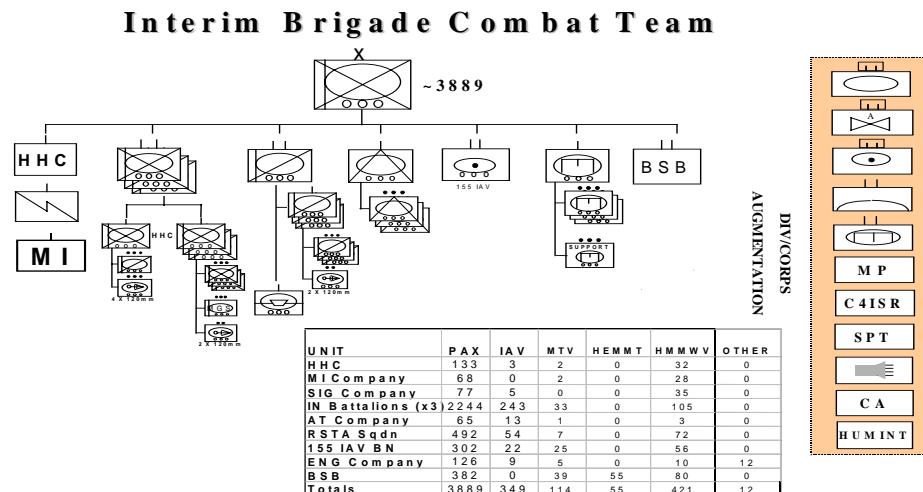


Figure 1: IBCT Organization (Source: IBCT Operational and Organizational Concept)

²⁰ Author, The heavy separate brigades (i.e. 197th and 194th) are no longer found in the Active Component but featured many of the organizational capabilities now resident in the IBCT; both had cavalry troops, organic forward support units, etc.

The IBCT has three infantry battalions. These battalions serve as the primary maneuver elements of the Brigade; all other forces support their ability to conduct decisive operations.

Each battalion consists of a Headquarters and Headquarters Company (with organic reconnaissance, mortar, medical and signal platoons as well as the staff sections) and three infantry (rifle) companies.

Each rifle company is organized with three rifle platoons. These platoons have three nine-man squads transported in Infantry Carrier Vehicles (ICVs). While the decision on the final type of ICV has yet to be made, each will be capable of carrying a full squad and have the direct fire ability to “provide effective supporting fires to the squad while dismounted”.²¹ In order to provide a lighter vehicle (which lessens the strategic transportation requirements) protection levels will be less than those afforded by current systems (e.g. M2/M3 series). Organic armor on the ICV will only defeat 7.62mm armor-piercing ammunition. Additional (“add on”) active or passive armor packages (crew installed within two hours) will defeat 14.5 mm armor piercing ammunition and anti-tank guided munitions up to, and including, RPG-7 missiles.²²

The IBCT’s infantry companies will have other assets not usually organic to existing light/mechanized companies. First among them is a Mobile Gun System (MGS) platoon of three systems. This equips the IBCT’s rifle companies with organic anti-armor and direct fire support for its infantry platoons. The final type of the MGS has not yet been determined. It will have, at a minimum, a 105mm main gun able to destroy hardened bunkers or positions and penetrate “a double reinforced concrete wall [to create a hole] through which the infantry can pass”.²³ The MGS platoon can operate as a three-system unit, or be broken down to support separate platoons.

²¹ Scott Gourley, “Milestones in Army Transformation”, Army (March 2000) [journal on-line] available at <http://www.usa.org>; Internet; accessed on 26 August 2000. Initial BCTs will use LAV III’s purchased from the Canadian Army. 35 other types of systems (both tracked and wheeled) were tested during the Platform Performance Demonstrations at Ft. Knox in early 2000.

²² Ibid.

²³ Ibid.

Next are increased numbers and types of mortars. Mortars organic to the company include four ICV mounted 120mm mortars, two 81mm mortars, and two 60 mm mortars. This represents a great increase from previous designs. Mechanized infantry companies have no organic mortars, and existing airborne, air assault and light infantry companies have only two 60mm systems. The company will as well have an organic Fire Support Team and forward observer parties (of two men) with each of the platoons.

Other units organic to the IBCT provide significant support to its rifle battalions and mitigate the risk resultant from a lack of organic protection (e.g. heavy armor). To offset its vulnerability to tank direct fires, the Brigade has an organic Anti-Tank (AT) Company. This company will provide the ability to defeat enemy armored forces and protect the lightly armored ICVs. Comprised of three platoons, each platoon will have four TOW IIB systems mounted on ICVs and capable of dismounted employment. The AT Company can be employed as a unit, or can be employed with separate platoons attached to each battalion.²⁴

Another significant IBCT unit is its Reconnaissance, Surveillance and Target Acquisition (RSTA) Squadron. The RSTA Squadron is the IBCT's primary source of information and directly fosters the Brigade's desired levels of situational understanding. These levels are developed as the squadron achieves three essential tasks. First, it will use human intelligence (HUMINT) sources to develop a "grass roots" situational understanding of the effects of the battlefield. Next, it will conduct reconnaissance to detect enemy disposition, capabilities and vulnerabilities. As well, it will conduct limited security operations (screen) to protect IBCT forces.²⁵ While it must excel in traditional reconnaissance missions, the RSTA Squadron has an expanded cognitive scope. RSTA reconnaissance objectives will expand to include a focus on

²⁴ U.S. Department of the Army, Interim Brigade Combat Team Operational and Organizational Concept (Washington, D.C: Army Chief of Staff, 2000), 17

²⁵ Ibid., 30: The RSTA Squadron lacks the organic capabilities to protect the main body from direct and indirect fires. Moreover, it has neither tanks nor ready access to Army aviation. As such, its ability to guard is limited. As well, it does not have the assets required to operate separately from the main body (namely artillery and combat service support) and thus cannot cover.

environmental effects (political, cultural, economic and demographic factors) not normally seen in traditional reconnaissance objectives.

The Squadron is composed of four troops. One troop is a Target Acquisition and Surveillance Troop of a Tactical Unmanned Aerial Vehicle (TUAV) platoon, a ground sensor platoon and NBC reconnaissance platoon. The remaining three troops are Reconnaissance Troops each with a 120mm mortar section and three Interim Armor Vehicle (IAV) variant-equipped platoons.

The IBCT's most potent organic indirect fire capability lies in its Field Artillery Battalion. This battalion is currently equipped with 12 M198 (towed) 155mm howitzers organized into three four-howitzer batteries. In the initial BCTs, the Medium Tactical Vehicle (MTV) will tow the howitzers while the interim BCTs will use the IAV as a prime mover. While an IAV-based self-propelled artillery piece is the requirement, such a system is not available for the initial force. While the optimum organization would include both cannon and rocket artillery, the IBCT's deployment and support constraints do not allow this. Thus, the IBCT only has cannon artillery.

Other units organic to the IBCT include a Signal Company, a Military Intelligence (MI) Company and a Brigade Support Battalion (BSB). The Signal Company will provide normal levels/type of communications support while providing additional capabilities to support communications over extended distances and with joint fires/support and national-level intelligence assets. A Military Intelligence Company will essentially operate as an extension of the Brigade's S2 section for the internal and external management of all intelligence, surveillance and reconnaissance (ISR) assets. This company will provide that support normally found in Divisional MI Companies but will have enhanced capabilities to interface with systems at echelons above division and corps (to include theater/national level assets).²⁶ The Brigade will also have a Brigade Support Battalion (BSB) to coordinate and execute CSS support. The BSB will focus on distributing supplies and will have limited on hand supplies.

²⁶ Ibid., 32

Capabilities

The IBCT has significant capabilities. These can best be expressed in the framework of what the Operational and Organizational Concept describes as its four core competencies. These four include: strategic and tactical mobility, high infantry strengths for close combat in urban/complex terrain, combined arms integration down to the company level, and enhanced situational understanding.

First among them are the IBCT's high levels of strategic and tactical mobility. As a "lighter" force it is more mobile (at both strategic and tactical levels) than existing mechanized/armor forces and can deploy all of its assets by C-130 within 96 hours.²⁷ The stated use of C-130 transport allows the IBCT to deploy into theaters that may lack the infrastructure to support larger aircraft that require longer, more improved runways. The IBCT also possesses a great degree of tactical mobility; each of its soldiers has access to vehicle transport. This ability allows rapid repositioning once committed and allows the IBCT to keep pace with the mechanized/armor formations they may have to work with in a small scale contingency (SSC) or major theater war (MTW) environment.

Next are the IBCT's high infantry strengths for close combat in urban/complex terrain. Design analysis clearly demonstrated the need for a robust infantry force to force tactical decisions in the most likely physical environment for conflict (urban/complex terrain). These infantrymen, supported by readily available direct and indirect fire means, provide a capability for the IBCT to close with and destroy enemy forces in the kinds of complex terrain which will likely typify future battlefields.

The IBCT is unique because of its high level of combined arms integration down to the company level. Traditionally, combined arms task organization occurs at battalion level and higher. Analysis for the IBCT, however, indicated that because of its unique operating environment, force effectiveness and mutual support requirements were best met by forming

permanent combined arms units down to the company level.²⁸ Thus, each infantry company's organization will include assets which used to be only attached or under operational control (i.e. an armor [MGS] platoon, fire support team, etc.). This provides the capability to employ smaller units with greater capabilities. Thus, the IBCT can afford to disperse throughout the battlefield using smaller, more self-contained combat units. This permanent teaming also allows the IBCT to have greater unit cohesion. No longer will units be task organized for specific missions, the IBCT's battalions and companies will live and train together as true combined arms organizations. This will generate greater trust and cohesion as well as fostering a more intuitive grasp of complementary and supplementary abilities of various arms.

Significantly the IBCT has the potential for enhanced situational understanding. The IBCT's large numbers of intelligence, surveillance and reconnaissance (ISR) assets allow it to collect a staggering amount of information. Once processed and analyzed, this information can be translated into a more complete understanding of the situation and allow commanders to grasp the opportunities this understanding provides. It is this enhanced situational understanding which provides the capability to develop the situation while out of direct fire contact with the enemy.

Recognizing that the IBCT may need augmentation in some scenarios, the IBCT is both scaleable and capable of augmentation. The IBCT is scaleable in that it has the ability to accept like-type (i.e. light/mechanized infantry, additional cannon artillery, etc.) reinforcing forces. It is capable of augmentation in that its staff and organization are able to accept augmenting forces to provide those capabilities not resident within the IBCT organization (i.e. Army aviation, rocket artillery, etc.). In both cases, added units will execute their normal mission essential task list tasks and therefore will not require extensive training in order to deploy and operate with the IBCT.²⁹

²⁷ Ibid., 12

²⁸ Ibid.

²⁹ Ibid., 13

Limitations

The need to produce a strategically mobile force has produced a force with some significant limitations. Three of the most significant include a vulnerability to fires (both direct and indirect), a reliance on “reach back” systems and shortfalls in assets needed for high intensity conflict (e.g. MTW).

The IBCT is a product of several “balancing acts”. Perhaps the most significant balance is the one sought between mobility and protection. In the Army’s search for strategic mobility they had to sacrifice previous levels of vehicle/personnel protection known in mechanized or armored units. As a force equipped with medium-weight armored and thin-skinned vehicles, the IBCT faces the challenge of achieving an adequate level of force protection and survivability against both direct and indirect fires without significant protection levels embedded within the ICV/MGS design. Quite simply, the IBCT is not equipped to protect itself against significant armor, mechanized or attack aviation or artillery threats.³⁰

This limitation is amplified by another limitation. The IBCT is reliant upon “reach back” for significant assets not found within the unit. Using advanced communications systems and capitalizing on increased range of weapons and transport, the IBCT (once committed) is required to reach back for those capabilities not resident within its organization. Primary capabilities that would be gained via reach back are information/intelligence from National-level sources, joint fires/effects, logistics and force protection. Access to these systems (particularly echelons above Division and Corps intelligence analysis) provides the IBCT with a significant bit of force protection and enhancement and is designed to counter its vulnerability to fires. This reach back is, as well, a significant limitation. Access to such systems are reliant upon fully functioning communications systems, and (in the case of logistics) established and resourced lines of communications. Commitment to an undeveloped, remote area of operations may hinder their ability to access these critical assets.

Another limitation is the IBCT's requirement for augmentation to fight in an MTW scenario. Its commitment as part of a Division or Corps in an MTW scenario or its commitment as a Brigade to guarantee the security of a peacekeeping or peace enforcing force in stability or support operations requires significant levels of augmentation. Most likely candidates for augmentation would include lift or attack aviation, armor, additional artillery and air defense artillery units.³¹

Employment

The IBCT is capable of employment in a full range of military operations. It is designed to be a full spectrum, combat force. While it has a utility in all operational environments, it is designed and optimized primarily for employment in small scale contingencies (SSC) in complex and urban terrain, against low-end and mid-range threats that employ both conventional and asymmetric capabilities.³² In stability and support operations it can serve a combat force (once augmented in accordance with situational requirements) to protect joint and coalition peacekeeping and peace enforcement forces or act as an early entry force to separate belligerents. In a major theatre war it will fight as one of the brigades in the division's main attack, or conduct supporting attacks (economy of force missions, reconnaissance, limited security missions).³³

Three significant employment patterns emerge from the IBCT's Operational and Organizational Concept. First, the brigade will be employed in a distributed and decentralized manner. Next, the IBCT will use a deliberate approach to gain information dominance and develop the situation while out of direct fire contact and the IBCT will be fully integrated with joint forces and have access to joint capabilities.

The IBCT will operate in a distributed manner; its area of operations will be much larger than those routinely occupied by conventional infantry brigades. One IBCT Battalion Commander

³⁰ Ibid., 32

³¹ Ibid., 6

³² Ibid.

³³ Ibid.

noted that the Brigade would occupy an area of up to 50 kilometers by 50 kilometers.³⁴ This distribution is an attempt to counteract the most common threat tactics. As previously observed, future threats will disperse in response to the advantages that U.S. forces enjoy in weaponry and acquisition. Thus, “the requirement to overwhelm an enemy scattered across a vast area will require a maneuvering force to blanket or saturate a broad area with many small, autonomous and extremely mobile combat elements”.³⁵

This distribution, in turn, leads to decentralization. While the IBCT will have unparalleled communications abilities (at much lower levels than previously encountered), its operational employment over such vast distances will place much more responsibility on junior leaders to make decisions inherent in tactical success.³⁶

A deliberate approach to gain information dominance and resultant situational understanding will also characterize IBCT employment. This approach is governed by two factors. First, the IBCT will not be able to rely on having a large number of armored vehicles with which to achieve decision. Thus, understanding their limitations in protection they will adopt a very deliberate approach to gain information dominance and situational understanding to avoid being surprised by a force which may be relatively better armored.³⁷ Next, technological advances allow such an approach. Increasing sophistication of future battlefields offers the means to know more about the enemy before we gain direct fire contact. Army units currently make contact with the enemy, deploy and report in order to develop the situation and then commit forces to a situation largely developed while in direct fire or visual contact. In contrast, the IBCT will employ its RSTA assets to understand the situation, develop the situation while out of direct fire contact (using manned or unmanned sensors) and then make contact at a place and time of their choosing.

³⁴ Scott Gourley, “New Brigade Structure Begins to Emerge” Army (February 2000) [journal on-line] available at <http://www.usa.org/armymag/feb2000.htm>; Internet; accessed 25 August 2000

³⁵ Scales, 74

³⁶ Gourley, “New Brigade Structure Begins to Emerge”

³⁷ Operational and Organizational Concept, 16

The IBCT's tactical employment will be characterized by the full integration with and of joint/interagency forces and assets. As previously stated, future battlefields will feature increased numbers of civilian agencies. Thus, this environment may often require IBCT forces to maintain direct links with multinational forces, US interagency organizations operating in the theater, and other international, local, non-governmental, and private organizations involved in the crisis, conflict or instability.³⁸ As well the IBCT will rely on joint assets to provide much of its required capabilities, especially strategic lift and joint effects (e.g. close air support, naval gunfire, strategic reconnaissance).

Tactical Approaches

The IBCT is prepared, as a military force, to conduct close combat to force a decision in any environment. In close combat, its employment will follow one of three general approaches. The first approach is to first gain situational understanding, and then move quickly (mounted) to achieve a positional advantage. Once in position, the IBCT battalions will dismount infantrymen to conduct close combat (while supported by organic direct/indirect fire assets) to fix enemy forces. The remainder of the IBCT will form the decisive operation and follow the same approach to maneuver against the enemy's flank and rear as the decisive operation.³⁹

In the second approach, IBCT maneuver units would fight mounted. This approach stems from a recognition that IBCT units may not always achieve the desired levels of situational understanding and have to "fight as a mounted force if ambushed or forced into a meeting engagement".⁴⁰ In this approach, IBCT units will remain mounted. They will use standard "react to contact" battle drills to fight their way out of or through the contact.

A third approach is separate employment of dismounted infantry from their carriers. While dismounted infantry forces are executing deliberate assault against other enemy elements, their supporting platforms could be engaged by separate enemy forces and forced to fight separately.

³⁸ Ibid., 17

³⁹ Ibid., 28

While the Operational and Organizational Concept acknowledges this possibility, it characterizes it as “rare” and notes that “commanders must seek to rapidly conclude one or the other separate action in order to renew the higher level of synergy and combat effectiveness provided by the integrated interaction of the combined arms formations.”⁴¹

In any of the approaches, the IBCT’s platoons and squads will “execute tradition tactics” to close with and destroy the enemy.⁴² Dismounted infantry will use existing tactics (as outlined in FM 7-10 The Rifle Company and FM 7-8 The Infantry Platoon) to destroy the enemy with direct fires as organic direct and indirect fires support.

Conclusion

The IBCT’s organization is hardly revolutionary. Previous organizations (e.g. heavy separate brigades) and current unit models (e.g. regimental cavalry squadrons) share many of its organizational aspects. It does, however, provide capabilities unique to an infantry brigade. While fully mounted, it has large numbers of infantry that can dismount in order to facilitate operations in the complex urban terrain so characteristic of future battlefields. While infantry centric, it has organic assets usually found only attached or in direct support to previous organizations. Thus, the IBCT is well designed to operate in the dispersed, future “empty battlefield”. Moreover the increased technological sophistication of RSTA assets allows a more deliberate approach to close combat which mitigates the risks associated with a smaller, lighter force in contact with well-equipped threat forces in close terrain.

The organization does have equally significant limitations. Given the requirement to balance mobility with lethality and survivability the IBCT is vulnerable to fires, reliant on situational understanding and relies on “reach back” for important assets and capabilities outside the brigade structure.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid., 30

One means to mitigate some of these limitations is an increased reliance on indirect fires; indirect fire capabilities within the unit can offer a significant force multiplier in close combat. The next chapter will describe their requirements for these fires and introduce the organizational and doctrinal changes designed to meet them.

Chapter 4

Requirements for Indirect Fires and Changes Proposed to Meet Them

The IBCT will require indirect fires in close combat. Indeed, because of its relative lack of protection these requirements may exceed those of existing mechanized units. Due to its unique tactical approaches (i.e. decentralized operations within an expanded area of operations) it may need higher levels of fire support than those levels afforded existing units.

This chapter introduces and describes the IBCT's requirements for indirect fires as stated in its Operational and Organizational Concept. These requirements are analyzed against existing fire support doctrine to both examine and justify the need for change in order to meet them. Moreover, this chapter identifies and describes the proposed changes themselves in order to provide a basis for subsequent analysis against stated requirements.

The author concludes that there are five stated requirements for indirect fires. Moreover, none are met by extant fire support organization or doctrine. Therefore, the need for those changes as outlined in both IBCT and Advanced Fires Operational and Organizational concepts are justified.

Requirements for Indirect Fires

Stated requirements for the IBCT are that all direct and indirect fires must be 1) mobile 2) fully integrated 3) mutually supportive 4) internetted to supporting fires and 5) minimize collateral damage and noncombatant casualties.⁴³

Indirect fires supporting the IBCT must be mobile. The systems that deliver indirect fires must be able to keep up with the IBCT's maneuver units. The systems must also be mobile in order to protect themselves. As a lightly armored force, indirect fire systems must be capable of rapidly repositioning to avoid enemy attack. As well, the fires delivered by those systems must

⁴³ Operational and Organizational Concept, 13

be mobile. They must be capable to rapid movement around the battlefield to capitalize on the IBCT's ability to strike the enemy in depth and support widely dispersed maneuver units.⁴⁴

Indirect fires must be fully integrated. They must support the commander's concept of the operation and not be seen, or applied, as an end unto themselves but applied as an element of a larger shaping or decisive operation. They must also be integrated to fires and effects assets at higher headquarters. Fire support personnel and indirect fire means are an element of a larger system. In order to provide effective fires the IBCT's fire support system must have access to supporting fires outside those fires organic to its organization.

Indirect fires must provide mutual support to the IBCT's companies and platoons. This mutual support allows maneuver units to achieve decision in close combat. In the context of the IBCT, mutual support comes largely in the form of protection. In turn, this protection is a function of delivering indirect fires that are both proactive and responsive. Fires, which achieve this two-fold endstate, provide a significant capability. Recent exercises have both highlighted and emphasized the added importance of lethal, accurate fires to protect maneuver forces against attacking mechanized forces.⁴⁵

Noting the IBCT's lack of protection against enemy artillery (highlighted in the previous chapter) the Operational and Organizational Concept states that: "...the artillery organization organic to the Brigade is focused sharply on the requirement to conduct responsive, proactive counter-battery fires".⁴⁶ The IBCT's indirect fire systems must acquire and engage enemy artillery systems before they acquire and engage friendly forces in order to achieve required levels of force protection and contributions to mission success. To be supportive, fires must also be responsive. The need for responsive indirect fires is a theme throughout our existing doctrine

⁴⁴ Ibid.

⁴⁵ Billy E. Wells Jr., "The Future of Infantry: Maneuver in the 21st Century" in the AY 97 Compendium for the Army After Next Project (Carlisle, PA: US Army War College, 1998), 8: This experiment was conducted by Ft. Benning's Dismounted Battlespace Lab.

⁴⁶ Operational and Organizational Concept, 18

and is a requirement for indirect fires for the IBCT.⁴⁷ Responsiveness is a function of direct access to fires; commanders must have access to those indirect fires that support their maneuver.⁴⁸ It is also a function of timeliness and accuracy. Indirect fires must arrive on time and in the correct location to deliver the appropriate effect.

Indirect fires must be “internetted” to supporting fires. Just as in existing (“legacy”) organizations, the IBCT’s fire support and artillery units must operate with ready access to fires of higher echelons.⁴⁹ Rifle platoons and companies must have ready access to fires from their organic mortar units; those same mortar units must have access to the reinforcing or complementary effects of fires from the Field Artillery Battalion. The Field Artillery Battalion must have access to the fires of units at echelons above Brigade order to provide reinforcing effects.

Indirect fire employment must also minimize collateral damage and non-combatant casualties. The IBCT is optimized for use in urban/complex terrain that will feature large amounts of civilian infrastructure and equally large numbers of civilian personnel. A likely mission constraint will be a reluctance (or restriction) to harm either. This targeting constraint leads to the need for fires to be extremely accurate in order to reduce collateral damage. As one transformation project officer noted: “It’s the kind of point-and-shoot capability that says, ‘I need you to take out the third window from the left on the fourth floor, and make sure you don’t do anything to the occupants that are behind the window.’⁵⁰ The Operational and Organizational Concept echoes this

⁴⁷ Author: ST 100-40 Tactics, FM 7-20 The Infantry Battalion and others all note the need for indirect fires to be responsive

⁴⁸ Command and General Staff College, Student Text (ST) 100-40 Tactics (Ft. Leavenworth, KS: Command and General Staff College, 2000), 4-45: “...subordinates must have direct access to sufficient firepower to adequately support their maneuvering units”. This theme is as well reflected in FM 7-30 The Infantry Brigade, *passim*

⁴⁹ Operational and Organizational Concept, 13: The term “internetted” is one unique to the IBCT Operational & Organizational Concept and connotes linkages enabled by advanced C4ISR systems.

⁵⁰ Dennis Steele, “The Army Stages Kentucky Demo to “Define the Art of the Possible”, Army (March 2000) [journal on-line] available at <http://www.usa.org>; Internet; accessed 25 August 2000

requirement when it notes that IBCT units must ensure that they “appl(y) precise fires and effects to avoid collateral damage and non-combatant casualties”.⁵¹

Sufficiency of Existing Doctrine and Organizations to meet the Requirements

Proposed changes to fire support doctrine and organizations are not simply changes for the sake of change itself. They are justified because existing organization or doctrine does not meet the IBCT’s requirements. Neither, as expressed in the 1988 version of FM 6-20 Fire Support in AirLand Battle and supporting manuals (i.e. FMs 6-20-40/30 which address fire support for Brigade and Battalion/Task Force) are suitable. Current doctrine does not recognize the changing threats, does not address the impact of changing technologies and is out of step with the Army’s evolutionary doctrine. Current organizations are not mobile; neither do they provide fully integrated fires.

The IBCT’s requirements are not met by existing fire support doctrine. Current doctrine is rooted in our cold war past; it does not recognize the changing threats. No longer can we afford a single focus on fighting large mechanized or armored formations in major theater war. The Army will continue to find itself committed in stability and support operations; the IBCT, as a force designed for success in these operations will have its requirements shaped by the nature of these conflicts. Fire support doctrine (like all Army doctrine) must recognize the changing physical environment; no longer can we afford to assume we will only fight on the plains of Europe or in the deserts of Southwest Asia. While the Army certainly may fight in either, its forces are more likely to fight in urban and/or complex terrain (as previously demonstrated in chapter 2). Current doctrine does not recognize this possibility with sufficient detail. FM 6-20, our keystone doctrine for fire support does not discuss fire support considerations for operations other than war, nor does it include discussions on MOUT operations.⁵² This shortfall is recognized by the Field

⁵¹ Operational and Organizational Concept, 12

⁵² U.S. Department of the Army, FM 6-20 Fire Support in AirLand Battle (Washington, D.C: Government Printing Office, 1984): No mention is made of the range of operations lesser than those found in high intensity conflict.

Artillery Center. Its current Commander, MG Toney Stricklin, admitted that: "...we must now improve our fire support doctrine to address changes in our operational environment that are applicable to the *entire spectrum* (emphasis added) of conflict".⁵³

Our current fire support doctrine does not address the impacts of changing technologies. As such, it does not meet the IBCT's requirements for mobile and fully integrated fires. Increased weapons ranges will change traditional parameters of supporting range and distance.⁵⁴ No longer do range constraints force field artillery units to be positioned immediately behind their supported maneuver units. Increased accuracy and rates of fire (coupled with advanced survey and navigational aids like those present on the new Paladin howitzer) change traditional concepts of field artillery employment. No longer do we have to position our cannons "hub to hub" on the battlefield. Field artillery platoons can move as integral units separated from other units of the battery. As well, increased acquisition and information processing technologies extend the range of observed fires and promote a more responsive "sensor to shooter" link. These concepts are not fully developed in existing doctrine. Neither FM 6-20 nor the existing FM 6-20-40 fully address the impacts of the Army's Battle Command System (ABCS) (the combination of the Maneuver Control System [MCS], All Source Analysis System [ASAS], Army Field Artillery Targeting Device System [AFATDS]) and how it must be integrated to facilitate improved targeting. Techniques and procedures for improved technologies must be addressed in doctrine to allow us to maximize their benefits.

Moreover, fire support doctrine must change because maneuver doctrine is changing. Doctrine is by its nature evolutionary. The Army's doctrine has evolved from the threat-based doctrine as described in the 1982 and 1986 versions of FM 100-5, to capabilities based as

⁵³ Toney Stricklin, MG, "World Fires for the 21st Century", Field Artillery (January/February 2000), 1

⁵⁴ Author: ST 100-40 Tactics defines supporting distance as "the distance two or more units may separate, yet come to the aid of each other before they can be defeated separately" and supporting range as "the distance one unit may be geographically separated from a second unit, yet remain within the maximum effective range of the second unit's weapon systems". Increased range of artillery systems coupled with the increased speed of their platforms or prime movers can increase either or both of these.

described in the 1994 version. New doctrine will be knowledge based and must both foster and support forces that are agile, responsive, versatile, lethal and survivable.⁵⁵

Current artillery and fire support organizations must change as well. Current organizations are do not meet the IBCT's requirements for fires that are supportive and internetted to supporting fires.

Current systems are not mobile; neither towed nor self-propelled howitzers can keep pace with a rapidly moving maneuver force. Their fires are not mobile; range constraints of current model howitzers only allow a maximum range of approximately 24 km (without the use of the few rocket-assisted projectiles [RAP] in a basic load). This range clearly does not fully support the extended tactical depths of the IBCT's area of operations (which may extend to 50km).⁵⁶

Current organizations do not provide the IBCT with fires that are responsive and internetted to supporting fires. Current battalion/brigade structures do not provide the requisite amounts of organic artillery (mortars in particular) which allow the delivery of responsive fires particularly over extended distances. Moreover, only light infantry units have organic forward observers. Thus, existing mechanized/armor platoons have no forward observers that would allow them responsive access to supporting indirect fires. Finally, our current organizations must change because the units they support will change. Future maneuver organizations will be flexible, tailored for specific operations, and built around the ability to gather, process and act on information.⁵⁷ As maneuver organizations change to reflect these capabilities, so also must our artillery and fire support organizations.

⁵⁵ U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-5 Force XXI Operations (Ft. Monroe, VA.: TRADOC, 1994), 3-18: While this 1994 version of FM 100-5 will be superceded by a 2000 version the importance of knowledge based doctrine and the resultant agility and flexibility of the force is supported by other U.S. Army documents (e.g. the FY 01 Army Posture Statement)

⁵⁶ Christopher F. Foss, Jane's Armor and Artillery: 19th Edition (Alexandria, VA.: Jane's Information Group Inc., 1999), 453: Ranges are taken from the M198 (towed) system's specifications which are similar to those of self propelled systems.

⁵⁷ TRADOC Pam 525-5, 4-5. This same reference specifically observes that "objectives such as sensor to shooter links will drive changes in our approach to fire support and, in turn, the organizations that provide and coordinate fires"

Proposed changes

Clearly, the fire support system (composed of command, control, and coordination facilities and personnel; target acquisition and battlefield surveillance; and weaponry) must change in order to meet the IBCT's requirements for indirect fires. These changes are addressed in two primary documents. The first is the Fire Support Operational and Organizational Concept (version 2.0) Future Fires and Effects for Advanced Full Dimension Operations the second is the initial draft of Brigade Special Text (BST) 6-20-40 Tactics, Techniques and Procedures for Fire Support for the Brigade Combat Team.

The former is a statement of operational design and performance parameters for the future fire support system. It establishes precepts for changes along four axis: effects-based fires, munitions centrality, organizational transformation and dynamic force tailoring.⁵⁸ The cumulative result of these changes will be that while indirect fire support will still “execute appropriate fundamental roles and missions, guided by doctrinal principles that have long been a part of its heritage” it will be more agile, adaptive and possessed of greater relevance to the 21st century.⁵⁹ The latter document addresses how those changes will be executed to support the IBCT with indirect fires. Within the IBCT, not all changes will be fully developed or fielded (such as munitions centrality); the complete transformation of the fire support system will not be fully realized until the fielding of the objective force.⁶⁰

Organizational Changes

The most significant changes to the IBCT's fire support system (composed of command, control and communications, surveillance and acquisition, delivery means and trained personnel) are those found in the organization of field artillery and fire support assets. These organizational changes offer the most striking paradigm shift. The changes include the addition of an organic

⁵⁸ Department of the Army, Future Fires and Effects for Advanced Full Dimension Operations, (Washington, D.C.: Headquarters Department of the Army, 2000), 5

⁵⁹ Ibid.

⁶⁰ Ibid.

field artillery battalion, the inclusion of organic fire support personnel within the infantry battalions and RSTA squadron and an increase in mortar strengths in the infantry battalions.

The most significant of these is the addition of an organic field artillery battalion. Previous Army of Excellence designs had artillery units organic only to Corps, Divisions and Cavalry Regiments. Field Artillery units at those levels were organized for combat by assigning tactical missions (e.g. direct support, reinforcing, general support, general support [reinforcing]) to establish a support relationship with a maneuver unit. In contrast, the IBCT has a command relationship with its supporting artillery unit. The change resulted from stated IBCT design parameters. Analysis revealed the value of embedded capabilities; it was better to design the IBCT with organic capabilities rather than depend on the “divisional slice” approach, tailoring its organization to the requirements of a particular situation.⁶¹

The IBCT’s artillery battalion differs from those found in direct support to Army of Excellence units. It is smaller than previous designs. The desire to save both weight and space decreased the numbers of howitzers from 18 to 12. As well, the need to reduce logistical footprint caused a reduction in service support capabilities; the battalion has extremely limited service support assets and relies on the BSB to for resupply.⁶² Equipped with the towed M198 155mm system it is of larger caliber than those direct support battalions in light infantry divisions. However, it is not a self-propelled system like those in direct support to mechanized/armored units.

The battalion can fire all the conventional munitions needed to support both counterfires and close fires (e.g. high explosive, dual-purpose improved conventional munitions, smoke, white phosphorus, FASCAM and Copperhead). Its range extends to approximately 30 km using rocket-

⁶¹ Operational and Organizational Concept, 12

⁶² U.S. Department of the Army, Brigade Special Text (BST) 6-20-40 (Initial Draft) Fire Support for the Brigade Combat Team (Washington, D.C.: Headquarters Department of the Army, TBP), A-1: “reduction in capability is also reflected in the fact that the battalion no organic logistics assets so as to realize improved deployability with the remainder of the BCT”

assisted projectiles or 24 km using conventional munitions.⁶³ With each of its howitzers firing, the battalion can fire a maximum of 48 rounds per minute; and can fire 24 rounds per minute sustained.⁶⁴ While the howitzers will ultimately be towed by the surrogate IAV (in the fully fielded interim brigade) those in the initial BCTs are towed by a Medium Tactical Vehicle (the successor to the M980 series 5 Ton truck) capable of road movement of 92 km/hour and cross-country movement of 10 km hour.⁶⁵ It takes approximately 10 minutes to set and ready a gun for firing, while it takes approximately 10 minutes to displace the batteries. The M198 still requires detailed survey; positioning devices must be used to accurately determine firing position locations.

The next major organizational change is the inclusion of organic fire support personnel down to platoon level. Previous organizations had a Fire Support Element (FSE) at the Battalion level and a Fire Support Team (FST) at Company level. These sections were habitually associated with maneuver units, but remained organic to their parent artillery battalions. Within battalions and companies, they were usually only available to the supported units during major training exercises. In the IBCT, they are organic to the Brigade. Each rifle battalion (and the RSTA Squadron) has a Fire Support platoon. This platoon consists of a Fire Support Element for the battalion and Fire Support Teams for each Rifle Company, anti-tank company and RSTA reconnaissance troop. The FSTs include six forward observers for use by the platoons by forming

⁶³ Ibid., A-3. Ranges with currently fielded Dual Purpose Improved Munition (DPICM) are approximately 28 km. A number of munitions which will extend the range and improve accuracy are being developed. The M982 Extended Range Dual Purpose Improved Munition will extend the M198's effective range to 37 kilometers. The M982 can also carry the sense and destroy armor (SADARM) munition. SADARM is a top attack counter-fire munition with increased accuracy allowed by the use of millimeter radar

⁶⁴ FM 6-50 Tactics, Techniques and Procedures for the Field Artillery Cannon Battery, (Washington, D.C: Government Printing Office, 1996), M-2

⁶⁵ Christopher F. Foss, Jane's Armour and Artillery 19th Edition 1998-1999, (Alexandria, VA.: Jane's Information Group Inc.: 1999), 472: Latest information still has the listed speeds reflecting specifications when the M198 is towed by the M980 series 5 Ton trucks. Separate figures from Jane's Military Transport listed only the road speeds for the MTV series (92 km/hr). This is a 7.8 % increase over the M980 series' 72 km/hr. Thus, the cross country speed of the M198 when towed by the MTV was gained by adding 7.8% to the speeds when towed by the M980 series.

into three teams each of one Forward Observer (Sergeant) and one Fire Support Specialist (Private First Class).⁶⁶

The purpose of this change is to address maneuver commanders' long-standing concerns that there were not enough dedicated forward observers within existing mechanized/armored companies. These concerns were perhaps most stridently stated by MG Ernst (then Commandant of the Infantry School) who observed that "Not 20 years ago, the company commander had no less than 15 dedicated forward observers: nine rifle platoon 11C mortar FOs, three rifle company 11C mortar FOs, and three rifle company 13F artillery FOs".⁶⁷ MG Ernst goes on to explain that over time the authorizations for most of these observers were centralized: the twelve 11C FO positions were moved to the direct support artillery battalion. As a result the Army's mechanized and armor platoons had no dedicated observers to control the delivery of artillery; platoon leaders had to control both direct and indirect fires. While calling for fire is well within their abilities, the time to do it correctly came at the expense of the time required to control their platoons' fire and movement. As well, without means to communicate digitally directly to the company's FST, they had to rely on voice communications that added to the time required and contributed to complexity.⁶⁸

The final organizational change increases the numbers of mortars in the IBCT's rifle battalions. Previous light (including airborne and air assault) infantry battalions had six heavy mortar systems (81mm) organic to the Battalion's Headquarters Company with six light (60mm) systems in the companies (e.g. 2 per Company). Mechanized battalions had a six tube heavy mortar platoon (106mm/120mm) with no company level mortars. In contrast, each IBCT rifle

⁶⁶ Ibid., 2-4: Battalion/Squadron FSE consists of one Fire Support Officer [Captain], one Plans Officer [1st Lieutenant], two Fire Support Sergeants [1 x Sergeant First Class and 1 x Staff Sergeant] and two enlisted Fire Support Specialists. Company/troop fire support teams consist of one Fire Support Officer (1st Lieutenant), one Fire Support Sergeant (Staff Sergeant), and two enlisted Fire Support Specialists.

⁶⁷ Carl J. Ernst, "Has the FA Walked Away From the Close Fight?", *Field Artillery* (September-October 1999), 11

⁶⁸ Ibid.

battalion will have a four tube heavy mortar section (120mm) organic to its headquarters company while each company will have four mortar systems (two 81mm and two 60mm).⁶⁹ Thus, mortar strength is improved from 12 systems (in light/airborne/air assault battalions) or six systems (in mechanized battalions) to 16 within the IBCT battalions. Increased organic mortar strengths share the same purpose as an organic field artillery battalion at the brigade level; they allow the maneuver commander ready access to an “embedded” capability.

Doctrinal Changes

These organizational changes are complemented by doctrinal changes. Primary doctrinal changes that directly apply to the interim force are a shift towards effects-based fire planning, the inclusion of non-lethal effects planning and the rise of precision fires. While not all are fully realized with the interim force, each will influence the IBCT’s use of indirect fires in close combat.

The primary change is a move towards effects-based fire support planning. Effects, as defined by the IBCT’s Operational and Organizational Concept, are “...the result of the directed application of lethal and non-lethal capabilities to achieve a desired purpose or outcome in support of the commander’s intent”.⁷⁰ The Fires Operational and Organizational Concept shares this definition and goes on to state that effects are “directed against a target within the battle space to achieve a desired purpose (close support, shaping, or counter-fires) that meets the supported commander’s intent.”⁷¹

At the Brigade level, the delivery of effects is the responsibility of the Brigade’s Fire and Effects Coordination Cell (FECC). Replacing the Fire Support Element of the Army of Excellence, the FECC “collaboratively plans and executes full spectrum fires and effects in an integrated fashion with the other battlefield systems resident within the BCT”.⁷²

⁶⁹ BST 6-20-40, A-6

⁷⁰ Operational and Organizational Concept, 33

⁷¹ Fires Operational and Organizational Concept, 14

⁷² BST 6-20-40, 2-3

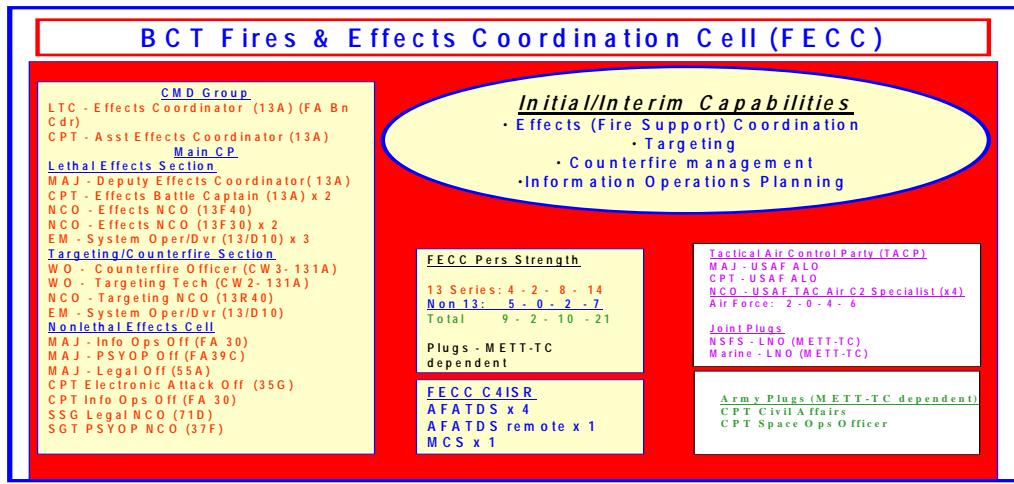


Figure 2: FECC Organization IAW BST 6-20-40

The FECC consists of a command group, a lethal effects section, a non-lethal effects section and a targeting/counterfire section. It has an attached U.S. Air Force Tactical Air Control Party (TACP) and can be augmented by other agencies as required (i.e. Civil Affairs or Psychological Operations representatives).

While the FECC's design is largely based on existing FSE organization, the kernel difference is the former's responsibility for non-lethal effects. While the FECC can execute all of the traditional fire support responsibilities of the FSE also has the ability and responsibility to integrate and coordinate available non-lethal capabilities (in particular information operations) to support the operations plan.⁷³

The difference between the current notions of fire support and effects based planning lie in the impacts on asset allocation. Current fire support planning allocates field artillery units to supported maneuver forces by assigning tactical missions, expressed in terms of support relationships. In effects based planning, effects are allocated rather than units. Those effects are then provided by “any system or mix of systems (including other joint services and coalition members) capable of meeting package requirements in terms of timeliness, effects, and collateral damage restrictions.”⁷⁴ Using this approach, the Brigade Commander will retain control (through the ECOORD) of the artillery battalion; it will not be assigned a tactical mission in support of any

⁷³ Operational and Organizational Concept, 34

⁷⁴ Fires Operational and Organizational Concept, 16

one of the three infantry battalions, or the RSTA Squadron. Battalions will be allocated effects rather than firing units (e.g. a direct support battalion). Commanders then apply those effects against targets of their choosing, provided those targets fall within the constraints of the Brigade Commander's attack guidance.⁷⁵

The Army is moving towards effects based planning primarily because future technological changes allow that move. Current systems must be positioned close to supporting units primarily because of limitations on range, communications and span of control.⁷⁶ Quite simply, to support maneuver units it has been necessary to locate artillery units within supporting range of those units. New technologies, specifically the development of precision munitions, non-lethal capabilities, increased range, improved C4ISR and increased access to joint assets have increased supporting range and led to an orientation on effects rather than the systems that provide those effects.⁷⁷ However, while the move towards effects based planning will begin with the interim force, only the objective force will see it fully realized. While the interim force will have a FECC and focus on effects (rather than delivery units), only in the objective force we will fully “separate effects coordination from delivery unit management by replacing current target acquisition, fire support coordination, and fire direction agencies” with effects management organizations” at all echelons.⁷⁸

The second major doctrinal change is the increased emphasis and reliance on non-lethal effects. Non-lethal effects include both offensive and defensive information operations (including all aspects of command and control warfare [e.g. psychological operations, electronic

⁷⁵ Ibid. “Assignment of generic priorities of fire to supported units will be superseded by pre-allocation of effects packages promising a specified tactical result in a specified time, applicable by the supported unit to any target(s) of its choice satisfying the packaging criteria, including targets of opportunity”.

⁷⁶ Roger S. Richardson, Army After Next: End of the Line for Field Artillery Standard Tactical Missions? (Ft. Leavenworth, KS: School of Advanced Military Studies, 1998), 8

⁷⁷ Operational and Organizational Concept, 33

⁷⁸ Ibid., 52

warfare, etc.]).⁷⁹ Non-lethal effects differ from non-lethal fires (defined as smoke or illumination) and may produce significant impacts on the battlefield. While targeting in future close combat will be constrained by the nature of close terrain and increased presence of non-combatants, non-lethal fires offer the commander the means to execute successfully within these constraints. While the Army recognizes the benefits of civil affairs, PSYOP and other non-lethal effects, it has not previously had one staff agency to integrate their use. In contrast, the IBCT recognizes the advantages offered by non-lethal effects and provides a “single source” unit to coordinate their delivery and synchronization with the scheme of maneuver.

The increased availability of, and emphasis on precision munitions provides a final significant doctrinal shift. This emphasis is driven both by their availability and by desirability. This emphasis is across all services and is driven by the very highest echelons of command. The current Secretary of Defense stated that “long range precision strike weapons, coupled with very effective sensors and command and control systems will become the dominant factor in future war”.⁸⁰ The IBCT will comply with this vision by employing precise fires and effects to avoid collateral damage and non-combatant casualties.⁸¹ This requirement takes on added significance with a realization that (as previously discussed) future battlefields will place combatants in ever closer proximity to large numbers of non-combatants. Increased reliance on precision fires allows very selective attacks that minimize collateral damage. As well, precision fires offer a more efficient use of fires. Their use precludes the need to “saturate an area with fires to achieve the effects we want” and the reliance on a “lengthy shaping phases to “set the conditions” with fires and other means”.⁸²

⁷⁹ BST 6-20-40, 3-24

⁸⁰ John F. Antal, The Ascendancy of Fires (Carlisle Barracks, PA: US Army War College, 1998), 8: This quotation appeared in Secretary Cohen’s 1997 Annual Report to the President and the Congress by The Secretary of Defense

⁸¹ Operational and Organizational Concept, 12

⁸² Department of the Army, FM 3-0 (DRAG Edition) Operations (Washington, D.C.: Headquarters Department of the Army, 2000), 6-15

Conclusion

The requirements for IBCT indirect fires are straightforward. Indirect fires must be mobile, fully internetted, mutually supportive, internetted to supporting fires to achieve immediate responsiveness and minimize collateral damage and noncombatant casualties. While these are not new requirements, our existing doctrine and organizations do not meet them. Existing fire support and field artillery doctrine does not recognize the new threats and threat environments, does not recognize the impacts of new technologies on maneuver and fire support and does not support changing maneuver doctrine. Existing organizations do not meet the requirements. Existing organizations are neither mobile nor responsive. Clearly, the Army must change its fire support doctrine and organizations.

These shortfalls justify the need for change. These changes are in both organizations (e.g. inclusion of an organic field artillery battalion and fire support personnel down to rifle platoon level and increased mortar strengths) and doctrine (e.g. a move towards effects based planning, inclusion and greater reliance on non-lethal effects and increased emphasis on precision weapons) and are designed to improve the fire support system. However, do they meet the requirements of the IBCT?

Chapter 5

Balancing Requirements against Proposed Changes

This chapter analyzes each requirement against the effects of the organizational and doctrinal changes. As previously identified, the requirements are for all IBCT fires to be mobile, integrated, internetworked to supporting fires, mutually supportive and minimize collateral damage. Proposed changes apply to both organizations and doctrine. Organizational changes include the addition of an organic artillery battalion, and increases in both mortars and forward observers. Proposed doctrinal changes include a shift towards effects-based planning, the inclusion of non-lethal effects, and increased emphasis on precision munitions.

Analysis reveals that the requirements are not fully met by the proposed changes. The sum of the changes result in fully integrated fires but systemic, structural, and doctrinal issues limit the ability for the changes to meet the remaining requirements. The IBCT's cannon artillery lacks tactical mobility and may not have ready access to indirect fire assets outside the Brigade. Moreover, while doctrinal changes (in particular the shift towards effects-based fires) have great potential, a lack of common definition may not allow mutual support.

Are the IBCT's indirect fires mobile?

While the IBCT's indirect fires are strategically mobile, they are not sufficiently tactically mobile.

The artillery battalion has increased strategic mobility. The reduction of weight and space savings resultant from the selection of fewer, light towed systems allows artillery battalion's integrated deployment in the Brigade's timeline. Weight and space savings are perhaps best be illustrated by comparing the 12 tube M198 battalion against an 18 tube M109A6 (Paladin) battalion (found DS to mechanized or armored units). By fielding a battalion with 12 M198 howitzers vice a battalion of 18 M109A6 (Paladin) the Army has realized a weight savings of just

over 377 tons.⁸³ Even if the added requirement to lift the M198's MTV prime mover is included, the weight savings remain approximately 358 tons.⁸⁴

While the M198 is much lighter than the M109 (Paladin), it is a slightly bigger system: 307 cubic feet as opposed to the Paladin's 293 cubic feet. However, by reducing the number of systems, the Army has reduced cubic space demands by 1590 cubic feet. With the added need to deploy 12 MTV prime movers, the space saved is just over 1400 cubic feet.⁸⁵ Thus, the Army has provided a strategically mobile force which (when compared to the types of units usually in direct support to mechanized infantry/armored units) results in a weight savings of approximately 358 tons and 1400 cubic feet.

The fires are not tactically mobile. This is due to three factors: the M198's limited cross country movement speeds, the time needed to emplace the howitzers, and the limited ability to "move" fires throughout the IBCT's dispersed area of operations.

The towed M198's cross-country speeds do not match those of the IAV equipped maneuver force. While exact speeds are driver and terrain/weather dependent, its towed speeds will not largely exceed 10-15 km/hour.⁸⁶ It is slower than the movement rates of the Light Armored Vehicle (currently fielded as the initial brigade's combat and reconnaissance vehicle) and most other IAV candidates.⁸⁷

⁸³ Department of the Army, FM 6-50 Tactics, Techniques and Procedures for the Field Artillery Cannon Battery (Washington, D.C.: Government Printing Office, 1996), pp. 2-3: Each M198 weighs 15,800 lbs. while each M109A6 (Paladin) weighs 62,960 lbs. Were the same 12 tube battalion fielded with Paladin the weight saving would be approximately 226 tons.

⁸⁴ Christopher F Foss, Jane's Military Vehicles and Logistics, 19th ed., (Alexandria, VA: Jane's Information Group, 1999), pp. 466-67: The weight of the M1083 Medium Tactical Vehicle is approximately 4040 lbs.; 12 such MTVs would add approximately 48, 000 lbs. or approximately 19 tons.

⁸⁵ Ibid.

⁸⁶ Christopher F. Foss, Jane's Armour and Artillery, 19th ed., (Alexandria, VA: Jane's Information Group Inc., 1999), 472 No cross-country speeds are listed for the M198 when towed by the MTV. The MTV's speed on improved roads is 92 km/hour, approximately 7.8% faster than the 72 km/hr speed of the 5-ton truck. When the M198 is towed by a 5 ton this reference specifies a cross-country speed of approximately 8 km/hr; thus, the author adds 7.8% to get a figure of 10 km/hour.

⁸⁷ Foss, Jane's Armour and Artillery, 197: While no cross country speeds of the LAV III (Canada) or LAV 25 (USMC) could be found, the author's experience with wheeled cross country movement amply proves that you cannot travel as quickly in a truck towing a 16,000 lb howitzer as you can in a combat vehicle with improved ground clearance and more engine power.

Mobility is also limited by the time required to emplace the howitzers. Before use, the M198 must have a surveyed position. Because it does not have an on-board position-locating device, it requires survey for a “common grid”. This common grid allows the battalion to mass fires. Without survey, they have to conduct an observed adjustment of all tubes on a common target or prior registration using a common point.⁸⁸ The task can be completed by the Battalion’s survey teams or by battery personnel using hasty survey techniques. While no time standards are published in FM 6-2 Field Artillery Survey or in ARTEP 6-037-30 MTP it does take some amount of time.⁸⁹ Moreover, as well as the time required for survey, it takes time to emplace the howitzer and ready it for firing. Unlike a self-propelled system, it cannot simply stop and fire. Emplacing a howitzer platoon takes approximately 10 minutes.⁹⁰ Much can happen in close combat in ten minutes.

Finally, the IBCT’s artillery battalion will not be able to provide mobile fires by moving fires around the battlefield. This is a function of both type and quantity of systems. The range constraints of the M198 (approximately 24 km) will not allow it to support the dimensions of the IBCT’s area of operations, which can reach 50km x 50km. Moreover, as the brigade’s area of operations has increased in size, its artillery battalion has decreased in size. While AOE divisions have reduced the size of battalions from 24 tubes to 18 tubes, the IBCT’s artillery battalion is further reduced to 12 systems. This translates to reduced support: while an 18 tube M198 battalion has the ability to fire 72 rounds per minute, a 12 tube battalion can fire only 48 rounds

⁸⁸ Department of the Army, FM 6-2 Field Artillery Survey, [book on-line] (Washington, D.C: Government Printing Office, 1996, accessed 20 October 2000); available from <http://www.adtl.army.mil/cgi-bin/adtl.dll/fm/6-2/Ch14.htm>; Internet

⁸⁹ Department of the Army, ARTEP 6-037-30-MTP (Perform Hasty Survey): Standards for the task are only expressed in terms of accuracy, e.g. the position is accurately surveyed to within 50m in any direction, within ½ contour interval, and 2.0 mils of the azimuth of the orienting line.

⁹⁰ Conversation with MAJ Micheal Mahaney USMC. Time standards for occupation are not established by ARTEP 6-037-30 MTP (Conduct Occupation of a Position Area). Stated standards are only that the battery/platoon is “...ready to deliver fires by the prescribed time.” MAJ Mahaney commanded an M198 battery and from experience stated that it takes approximately 10 minutes to emplace a battery to fire.

per minute.⁹¹ Thus, as the IBCT executes close combat in a dispersed area its artillery battalion cannot support the full dimensions of the area of operations.

While strategically mobile, the cumulative effect of the artillery battalion's organizational design creates a force that is not as tactically mobile as its supported force.

Are the IBCT's indirect fires integrated?

Indirect fires are well integrated in the IBCT. This integration is a result of the organizational changes which provide greater amounts of organic artillery and fire support organizations within the IBCT and one aspect of a doctrinal change which results in a shift towards effects based fires.

The inclusion of an organic artillery battalion meets the IBCT's vision of embedded capabilities to enhance organizational effectiveness. By forming an organic relationship, the Army has clearly facilitated that unity of command which is critical to the integration of indirect fires. As FM 6-20 Fire Support for the Airland Battle states: "The achievement of unity of command is a critical objective of a successful fire support system".⁹² By forming a command relationship at the Brigade level, the Army has clearly established unity of command over this important system and has resourced the Brigade Commander with an appropriate level of authority.

Indirect fires are also well integrated at the Battalion and Company level. Organic mortars provide the same unity of command found at the Brigade level for the howitzers. Thus, the organic indirect fire units throughout the IBCT allow effective integrated fires.

One aspect of the shift towards effects based planning will also improve integration: such a shift results in centralized control that allows the more efficient use of artillery. Artillery doctrine has long held that centralized control of assets was the most efficient. The Army's keystone field artillery doctrine lists one of its "five fundamentals of organization for combat" as "maximum

⁹¹ FM 6-50, M-2

⁹² FM 6-20, 1-6

feasible centralized control".⁹³ Field artillery is most efficient with control centralized at the highest force level consistent with the fire support capabilities and requirements of the overall mission. This centralization allows the Force Commander to directly control fires and deliver massed effects where they are most needed. Thus, centralized control of field artillery permits flexibility in its employment and facilitates effective support to each subordinate element of the command.⁹⁴

In summation, both organizational and doctrinal changes have resulted in well-integrated fires and the successful meeting of this requirement.

Are the IBCT's Indirect Fires Internetted to Supporting Fires?

Within the IBCT, indirect fires are successfully internetted to supporting fires. However, its reliance on reach-back for reinforcing fires may not allow access to fires from units/sources outside the brigade.

Fires are well internetted to supporting fires within the brigade. This is first a function of increased numbers of forward observers down to rifle platoon level. Company and Platoon level FST/forward observers are co-located with their supported forces and equipped with voice and digital communications that allow them to quickly transmit calls for fire and other information to the Battalion's FSE. The latter communications systems allow interface with automated field artillery targeting devices (AFATDs). Using digital devices they can automate requests and do not have to rely on time consuming voice transmissions and accept resultant delays and potential for transcription errors.

This increase in numbers of observers has a second order effect as well: it can result in an increased situational understanding within the Brigade's fire support system as a whole. Having

⁹³ FM 6-20, 2-4. Fire support doctrine recognizes a distinct difference between efficiency and effectiveness. Centralized control results in increased efficiency while decentralized control results in increased effectiveness. Thus, while a direct support relationship (the most decentralized support relationship) allows more effective fires it is (from the Force Commander's standpoint) the most inefficient use of artillery

⁹⁴ Ibid.

communications capable observers (digitally integrated) allows the Field Artillery Battalion and FECC “eyes” forward on the battlefield down to levels not previously encountered.

Unfortunately, the IBCT may not be “internetted” to fires outside the brigade. This internetting requires both the supporting fires themselves and the communications means to request them. The IBCT may have neither. If the IBCT is employed outside of its parent division, it will have no organic reinforcing cannon or rocket artillery. Thus, the Commander must decide if the organic howitzer battalion will support shaping operations (e.g. counterfire) or decisive operations (e.g. close combat). Without access to these internetted fires outside the brigade, the IBCT does not have sufficient fires to do both.⁹⁵

Even if fires outside the Brigade are available, the IBCT may not be able to access them. While the IBCT makes much of its ability to use “reach back” fires to counteract the units’ shortages of organic capabilities these fires (e.g. joint fires/effects from echelons above corps assets) are only valid if they can be accessed. As the Advanced Fires Concept explains: “Successful effects-based fires *presumes* (emphasis added) direct C4ISR linkages among combined arms headquarters, and between them and supporting theater and national information and attack resources”.⁹⁶ While the IBCT has the hardware to support these “linkages”, this equipment is vulnerable to electronic attack and mechanical failure. Michael O’Hanlon in Technological Change and the Future of Warfare observes that modern C4ISR equipment is increasingly susceptible to physical disruption due to high altitude electromagnetic pulse (HEMP), conventional jamming and software crashes (both self- and hacker-induced).⁹⁷ Moreover, he explains that the Defense Department’s increasing reliance on commercial off-the-shelf products that lack protection exacerbates this vulnerability and “hardening” needed for

⁹⁵ Operational and Organizational Concept, 32: Acknowledging this shortfall the O&O states that “In operational environments having a high level of threat artillery, the force must be augmented with cannon and rocket artillery to conduct proactive counter-fires against the threat”.

⁹⁶ Fires Operational and Organizational Concept, 12

⁹⁷ Micheal O’Hanlon, Technological Change and the Future of Warfare (Washington, D.C.: Brookings Institution Press, 2000), 174

military applications. When (if) those systems fail, the IBCT will no longer be able to reach back and gain access to those fires.

Even if the “reach back” fires are accessed, they may not be effective in close combat. During one iteration of the Army After Next Wargame, Rand analysts noted that reach back systems “had least contribution to mission (defending cities) because of the range needed and mass required in targets”. That is, reach back systems were not effective in close combat because the types of targets found in that environment (dispersed targets at close ranges) were not suited to their use.⁹⁸

In short, while the fire support system within the IBCT results in successfully “internetting” fires, the same success is not found outside the IBCT. Increased numbers of forward observers equipped with redundant means of communication allows the IBCT’s companies and platoons access to responsive fires. Unfortunately, the IBCT’s reliance on relatively fragile systems to gain “reach back” access to reinforcing fires may not result in its successful internetting to assets outside the Brigade’s organization.

Are indirect fires for the IBCT mutually supportive?

While a change to command relationships may allow fires to be mutually supportive, equipment limitations within the IBCT’s artillery organizations may not allow mutual support. As well, while a doctrinal shift towards effects based fires can in theory promote greater mutual support, it may not in practice due to a lack of common understanding of the definition of desired effects.

The formation of organic field artillery battalion as well as the inclusion of organic fire support elements and increased strengths of organic mortars all ensure that the Brigade is organized for mutual support. These assets all ensure the formation of units within the Brigade that have their own indirect fire assets. Communications infrastructures previously identified

⁹⁸ John Matsumura, The Army After Next: Exploring New Concepts and Technologies for the Light Battle Force (Santa Monica, CA: Rand Corporation Arroyo Center, 1999), 33

allow these units to talk to each other in either digital or analog formats and allow each echelon of fire support the support of the next higher echelon.

However, equipment limitations within these organizations may result in a lack of mutual support. First, as discussed earlier, the field artillery battalion does not have the range nor numbers of systems needed to conduct simultaneous counter fire and close fire. Thus, when involved in counter fire, the battalions must be prepared to rely upon their organic mortars for close fires. Next, the field artillery battalion's system limitations prevent their deployment in urban terrain. Towed howitzers in closed, dangerous terrain are exceedingly vulnerable to small arms fire. While their crews are no more exposed than their infantry compatriots are; their proximity to a towed howitzer (itself a high payoff target) makes them a much more lucrative target. Thus, they cannot be expected to be deployed in urban environments in a direct fire role. This obviates the ability to use howitzers in one of their most effective roles: direct fire support for dismounted infantry.⁹⁹ Indeed the lack of protected howitzers and their non-use in urban areas was, in one author's mind, the cause of many of the casualties in the U.S. Army's seizure of Aachen in October 1944.¹⁰⁰ The IBCT's rifle battalions must depend on their organic direct fire capabilities to reduce fortifications in urban areas.

A doctrinal change which has the potential to improve mutual support is the move towards effects based fires. No longer will Commanders focus simply on "destroy, neutralize, suppress"; nor will they focus on sheer numbers of projectiles (i.e. "a battalion six"). Commanders will instead state a purpose for their fires (addressed as an effect) which is clearly tied to a supporting decisive or shaping operation. When used correctly, this will better integrate indirect fires and will ensure they support the commander's decisive maneuver in close combat.

⁹⁹ Johnathan B.A. Bailey, Field Artillery and Firepower (Oxford, U.K.: The Military Press, 1989), 71

¹⁰⁰ Ibid., 75: Bailey counterposes this experience in Aachen with the American experience in Manila where some eleven battalions of 203mm and 240mm howitzers were used in the direct fire mode to reduce the walls of the Intramuros Palace and reduce the numbers of U.S. casualties.

Effects based planning will result in enhanced mutual support only if there is a common understanding of effect. Commander's guidance for fires must specify "how effects are to be allocated and applied [to include] results to be achieved and their duration, lethal and/or non-lethal means to be employed, acceptable risks to friendly forces, and collateral damage restrictions".¹⁰¹

Unfortunately, the Army has no single definition of "effects". While Operational and Organizational Concepts define them as a "result of directed application", neither maneuver nor fire support doctrine provide the commander with a commonly understood set of effects from which to choose one appropriate to the tactical situation. Neither FM 6-20 Fire Support for the Airland Battle, nor the initial draft of BST 6-20-40 Fire Support for the Brigade Combat Team defines specific effects. A "White Paper" published by the Center for Army Lessons Learned (Fire Support Planning for the Brigade and Below) only states that effects are a "quantification of the FA (sic) task and positioning of FA units".¹⁰² The Advanced Fires concept makes no mention of defined effects until almost halfway through the document and even then only lists four examples.¹⁰³ The most succinct "list" of effects found by the author is that found in FM 3.09-30 (6-30) Tactics, Techniques and Procedures for Observed Fire and Fire Support at Battalion Task Force and Below. That manual lists "targeting objectives" which describe the effects of attack on enemy capabilities and include delay, disrupt, limit, damage, divert and destroy.¹⁰⁴ However, only two of the objectives (destroy and disrupt) appear in the most recent version of FM 101-5-1 Operational Terms and Graphics. Without a common understanding of effects, it will be difficult for commander to clearly communicate his intent for their application.

¹⁰¹ Ibid.

¹⁰² U.S. Army Center for Army Lessons Learned, Fire Support for the Brigade and Below, [document online] available from http://call.army.mil/call/spc_prod/whtpaper/annexb.htm; Internet; accessed on 3 November 2000.

¹⁰³ Ibid., 43: "..... Virtually every terminal effect from hard target kill and area suppression to movement denial and obscuration..."

¹⁰⁴ Department of the Army, FM 3.09-30 (6-30) Tactics, Techniques and Procedures for Observed Fire and Fire Support at Battalion Task Force and Below, (Washington, D.C.: Headquarters, Department of the Army, TBP), 1-2

Without a common definition of effects, it will also be difficult for his Effects Coordinator (e.g. the artillery battalion commander) to translate “effect” into numbers of rounds or firing units required. While current definitions of destroy, neutralize or suppress are supported by the Joint Munitions Effects Manuals (JMEM) that translate those tasks to required munitions and quantities, there are no such tables to support any other defined effects. This shortfall is acknowledged by the artillery community who state that while “effects-based fires requires a routine means of translating commanders’ effects allocations into platform positioning and munitions requirements” there are no such means presently available.¹⁰⁵

Thus, while the addition of organic assets may allow mutual support, the equipment found in these organizations may negate these possibilities. Moreover, while a doctrinal shift towards effects-based fire, support can enhance mutual support by better nesting desired effects within the commander’s intent; poorly defined effects inhibit the effectiveness of this shift.

Do the indirect fires of the IBCT minimize collateral damage?

While the lethal indirect fires of the IBCT do not meet this requirement, its increasing reliance on non-lethal effects does.

The indirect fires of the IBCT do not minimize collateral damage. While the use of improved direct fire systems (e.g. improved accuracy of the Javelin, Follow On To TOW [FOTT]) offer the precision needed to hit the “second window from the right” the same capabilities are not found in the IBCT’s indirect fire systems. The only precision weaponry available in the IBCT is 155mm laser-guided Copperhead. Unfortunately Copperhead is not precise enough; it has a typical impact “footprint” of 1000m in radius from the nominal aim point.¹⁰⁶ Thus, Army forces must rely on close air support for any precision fires. However, while close air support may offer more precision, it may not be suited for use in close combat in urban environments with limited

¹⁰⁵ Fires Operational and Organizational Concept, 16

¹⁰⁶ Bernard Blake, ed., Jane’s Weapon Systems 19th ed., (Alexandria, VA: Jane’s Information Group, Inc., 1989), 158

engagement ranges. For example, in order to protect friendly forces from collateral damage two of the more common munitions used for close air support (the MK 21/29 “Walleye I” 1000 lb. TV guided bomb and the AGM-123A “Skipper” 100 lb. laser guided bomb) can be used no closer than 275m.¹⁰⁷

The use of any “precision” weapon to minimize civilian casualties is also reliant on successful acquisition. Just as with conventional munitions, you cannot use a precision weapon unless you can acquire its target. Acquisition is difficult in the types of close terrain characteristic of the IBCT’s future battlefield and current technologies do not allow the IBCT’s automated ISR assets (e.g. UAV, Rembass, GSR and Prophet radar) to penetrate multiple walls in an urban environment.¹⁰⁸

The IBCT’s reliance on non-lethal effects can meet this requirement. The potential contributions of such weapons as non-penetrating blunt impact munitions, acoustic systems, entangling devices and sticky and slick foams can “incapacitate personnel or materiel while minimizing fatalities, permanent injuries to personnel and undesired damage to property and the environment”.¹⁰⁹ The skilled use of any or all of these in combination can achieve a significant effect while minimizing collateral damage. Aside from the previous examples, an expanded definition of non-lethal effects which includes the employment of civil affairs, public affairs, law enforcement, legal officers, restoration of human services can accomplish missions while minimizing collateral damage. The FECC is well staffed to coordinate their use and the emphasis placed on the requirement to “nest” non-lethal effects within both the scheme of effects and commander’s intent ensures their support for both.¹¹⁰

¹⁰⁷ MAJ Micheal J. Forsyth, “Suppressing the Objective: Echeloning Fires in the Attack”, Field Artillery (May-June 2000), 41: These are the minimum safe distances which allow a 10% probability of injury (PI) to friendly forces.

¹⁰⁸ O’Hanlon, 117

¹⁰⁹ BST 6-20-40, 3-24

¹¹⁰ Operational and Organizational Concept, 33

The IBCT's lethal fires do not minimize collateral damage. Artillery munitions, as area weapons, are not suited for precision engagement. Neither are "precise" artillery munitions (e.g. Copperhead) precise enough to meet the requirement to minimize collateral damage. While close air support munitions may offer a more precise means, they have limited utility in environments with limited acquisition/engagement ranges. However, the IBCT's added reliance on non-lethal effects will minimize collateral damage while offering significant effects in particular situations.

Conclusion

The proposed changes only fully meet one of the requirements: the changes in fire support organizations and doctrine have resulted in fully integrated indirect fires. The remaining four are not fully met.

While the fires are strategically mobile, they are not tactically mobile. Reduced numbers of howitzers has resulted in an artillery battalion that can be deployed with the Brigade and integrated into its 96-hour timeline. Unfortunately, the battalions' fielding with towed howitzers (which require time for emplacement/displacement) results in a lack of tactical mobility. The fires are not fully internetted to supporting fires. While organizational changes allow increased access to indirect fires within the Brigade, the Brigade's shortfall in organic fires (and resultant reliance on "reach back") may not allow access to supporting fires outside its organization.

The proposed changes do not fully allow desired levels of mutual support. While the addition of organic artillery and fire support assets at each level of the IBCT provide the relationships to facilitate mutual support; equipment limitations may inhibit this support in practice. Also, while a move toward effects based planning may enhance mutual support, it can only accomplish this with commonly understood definitions of "effects".

Finally, the indirect fire assets provided the IBCT do not minimize collateral damage. This is in part, though, mitigated by the added inclusion of non-lethal effects that may deliver effects which can meet the requirement but these effects may not be suited to support in close combat.

Chapter 6

Conclusion

As the nature of conflict within this changed world continues to evolve, so also will the Army's notions of the organizations and doctrines needed to address its changed circumstances. As earlier discussed, post-Cold War realities have resulted in a physical environment that is remote, hostile and increasingly populated. The future battlefields formed by this environment will likely feature threat forces that have learned how best to attack U.S. forces and equipped to do so successfully.

As established, the IBCT provides a responsive, agile force designed to operate successfully in this environment against a variety of threats. It has also been established that an important element in its success will be its access to and employment of indirect fire support. Because it is a lightly armored force operating in an expanded area of operations (and often in complex/urban terrain) against well-equipped threat forces, it will require immediate access to responsive indirect fires. Finally, the author's analysis has revealed that while the proposed changes to fire support organizations and doctrine are well intentioned they do not fully meet the stated requirements. While an analysis of these changes is educational for the author, it is of use to the Army only when accompanied by recommendations for future study or modification.

As previously addressed, indirect fires for the IBCT are not sufficiently mobile. While the M198 is fielded pending the later fielding of an IAV based system, it will remain in the interim force for the near future. Two things would improve its mobility. First, obtain enough IAVs to allow it to be towed by a more mobile system. Current IAV choices (namely the LAV III) are better powered and have more mobility than the MTV. An M198 towed by an IAV may not be a perfect match for an IAV not towing anything; but it is better than one towed by an MTV. Next, ensure the IBCT's artillery battalion is fielded with munitions capable of extended ranges. If the M198 were supplied a projectile that could fire longer ranges; it could minimize the requirement to conduct slow moves to subsequent or alternate positioning areas.

The author also recommends that both fire support and maneuver doctrine recognize standard definitions of effects. The targeting objectives defined in the previously cited Battalion/Task Force fire support field manual offer one solution. Effects such as divert, disrupt or limit can be easily understood and support the use of “purpose” methodology outlined in maneuver doctrine and taught at Army schools and combat training centers. Moreover, these effects should be supported by tables similar to the existing (but outdated) JMEMs tables. These tables would allow fire support personnel to translate these effects into munition type/quantity data that will in turn facilitate the delivery of enough ordnance to ensure that the effect is actually resourced.

The organic shortfall in reinforcing fires must be addressed. Before the IBCT’s commitment, careful attention must be paid to augmentation requirements. The limitations of its organic field artillery must be understood; when engaged in a significant counter-battery fight, it will not be able to provide close fires to support close combat. Moreover, that augmentation should come in the form of physical assets attached to the IBCT Commander. The ability to “reach back” for augmenting fires is too reliant on fragile lines of communication. Even if these reach-back fires are delivered, they may not allow the precision needed for close combat in an environment that justifiably seeks to minimize collateral damage.

The organizational studies for Interim Division Design must also closely study the needs for Division Artillery. The artillery battalions now organic to the maneuver brigades denude the previous brigade sized divisional artillery of three of its battalions. Just as the inclusion of organic artillery at the brigade level is needed in order to provide the commander those organic assets needed to influence the fight for his battalions, so also must the division commander be provided the assets needed at his level.

In conclusion, while modifications to the proposed changes are needed, they offer an effective point of departure. Those changes offer in many ways significant paradigm shifts. Inclusion of organic field artillery units at levels previously not seen; a realization that a focus on “effects” in turn results in an understanding of the importance of “endstate” rather than the means which

deliver that endstate. While the indirect fire assets are not optimized for support (e.g. only 12 towed howitzers) they at least represent a constrained solution that puts some indirect fire assets integrated into an early entry force. Moreover, a realization that change (any change) is needed bodes well; both fire support and maneuver leaders evidence a justified concern for access to indirect fires. Indirect fires have always been essential ingredients in successful maneuver. From the era of the horse artillery, mobile responsive fires have allowed infantry soldiers to close with and destroy the enemy. This trend will continue and future developments will only serve to enhance the significant potential for field artillery and the lethal and non-lethal fires and effects it can deliver.

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